

## REMARKS

Claims 1 and 3-8 are pending herein.

### I. The USPTO has made a clear technical error in interpreting the Fujioka reference.

On page 9 of the Office Action, the USPTO respectfully argues that valves 13, 14, and 15 respectively have 5, 4, and 4 pipes interfacing with them. Applicants respectfully assert that this is a mistaken interpretation of Figure 1 of Fujioka, and that clarification of Figure 1 of Fujioka will help to illustrate that the claims are distinguishable over Fujioka.

For the Examiner's convenience, Applicants respectfully attach a copy of Figure 1 of Fujioka as Appendix A. In Appendix A, the vertices where valves 13, 14, and 15 are located are labeled as A, B, and C. Additionally, vertices in the pipes connected to MFCs 8 and 9 are labeled as D, E, F, G, H, and I.

Regarding Appendix A, it is respectfully important to note that segments A-B and A-C are not gas pipes at all. Instead, segments A-B and A-C represent signal lines for controlling valves 13, 14, and 15. For example, it is respectfully important to note that **segments A-B and A-C are connected to controller 7, and not to any mass flow controllers or reaction vessels.**

Thus, it is respectfully clear that segments A-B and A-C are not gas pipes at all, but are instead signal lines used by controller 17 to control valves 13, 14, and 15.

Instead, the actual gas pipes in Fujioka are shown by the segments G-A-D, H-B-E, I-C-F, D-E-F, and G-H-I.

In view of this clarification regarding the structures of Fujioka, it is respectfully asserted that the claims are allowable over the cited references, as explained in detail below.

### II. The anticipation rejections of claims 1, 3-5, and 8 based on Fujioka (US 5,180,684), as noted on page 2 of the Office Action.

The USPTO respectfully rejects claims 1-5 and 8 under 35 U.S.C. § 102(b). Claim 1 is an independent claim.

A. Fujioka does not disclose the specifically claimed precursory gas middle line or the specifically claimed reactive gas middle line, as claimed in claim 1.

Claim 1 claims in relevant part:

**“a precursory gas middle line having a predetermined volume that is arranged on a part or all of the precursor supplying line and **into which the precursory gas can be filled at a time when the precursory gas is not supplied, and/or a reactive gas middle line** having a certain volume that is arranged on a part or all of the reactive gas supplying line **and into which the reactive gas can be filled at a time when the reactive gas is not supplied.**”**  
(emphasis added)

Regarding these limitations, it is respectfully not seen where Fujioka discloses the claimed structure quoted above.

For example, the USPTO respectfully argues on page 2 of the Office Action that Fujioka shows a precursory gas middle line at the “piping between structures 13 and 15” and a reactive gas middle line at the “piping between structures 13 and 14.” Referring to the copy of Figure 1 of Fujioka shown in Appendix A, **the “piping between structures 13 and 15” must be the pipe segment defined by either A-D-E-F-C or A-G-H-I-C**, for the reasons explained above in Section I. Similarly, **the “piping between structures 13 and 14” must be the pipe segment defined by either A-D-E-B or A-G-H-B**. It is respectfully important to note that **segments A-B and A-C in Appendix A are signal lines and therefore cannot be a “precursory gas middle line” or a “reactive gas middle line,”** as claimed in claim 1.

Based on the interpretation of Figure 1 of Fujioka described above, Applicants respectfully assert that this piping between structures 13 and 15 and the piping between structures 14 and 15 cannot be the specifically claimed precursory gas middle line or the specifically claimed reactive gas middle line, as claimed in claim 1. For example, in Fujioka, pump 16 lies downstream of the lines that are connected to MFCs 8 and 9. Thus, the piping between 13 and 15 and the piping between 13 and 14 is sucked by pump 16, and gas flows from at least one of MFCs 8-12, to reaction vessel 1 or pump 16. Therefore, **the piping between 13 and 15 and the piping between 13 and 14 cannot be filled with the precursory gas or the reactive gas at a time when the precursory gas or the reactive gas is not supplied.**

Accordingly, it is respectfully asserted that Fujioka does not disclose the specifically claimed

precursory gas middle line or the specifically claimed reactive gas middle line, as claimed in claim 1.

In contrast, present Figure 1 illustrates at least one possible embodiment of the claimed structure quoted above. For example, present Figure 1 shows a reactive gas middle line 12 and a precursory gas middle line 22. As explained on pages 11-13 of the present specification, **reactive gas middle line 12 can be filled with reactive gas and precursory gas middle line 22 can be filled with precursory gas.** Thus, present Figure 1 shows a precursory gas middle line into which the precursory gas can be filled at a time when the precursory gas is not supplied, and/or a reactive gas middle line into which the reactive gas can be filled at a time when the reactive gas is not supplied, as claimed in claim 1.

The distinction noted above is important and non-trivial because it results in significant advantages over conventional devices. For example, as explained on page 2 of the Office Action, the structure of claim 1 **improves throughput during a process of forming the thin film and improves quality of the thin film.**

Thus, it is respectfully asserted that Fujioka does not disclose all of the limitations of independent claim 1. Therefore, it is respectfully asserted that Fujioka does not anticipate independent claim 1.

#### **B. Further explanation.**

In addition to the above arguments, Applicants also respectfully note that the structure of claim 1 includes a switching valve arranged on an inlet port and an outlet port of the middle line respectively so as to form a closed space for folding the gas. However, it is respectfully important to note that three-way-valves 13, 14, and 15 do not form a closed space for folding the gas.

#### **C. The dependent claims.**

As noted above, it is respectfully asserted that independent claim 1 is allowable, and therefore it is further respectfully asserted that dependent claims 2-5 and 8 are also allowable.

III. The obviousness rejection of claim 6 based on Fujioka in view of Ahn (US 2002/0122885), as noted on page 6 of the office Action.

As noted above, it is respectfully asserted that independent claim 1 is allowable, and it is further respectfully asserted that Ahn does not overcome the deficiencies in Fujioka as noted above in Section II regarding independent claim 1. Thus, it is respectfully asserted that dependent claim 6 is also allowable.

IV. The obviousness rejection of claim 7 based on Fujioka in view of Udagawa (US 6,645,302), as noted on page 7 of the Office Action.

As noted above, it is respectfully asserted that independent claim 1 is allowable, and it is further respectfully asserted that Udagawa does not overcome the deficiencies in Fujioka as noted above in Section II regarding independent claim 1. Thus, it is respectfully asserted that dependent claim 7 is also allowable.

V. Conclusion.

Reconsideration and allowance of all of the claims is respectfully requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130.

Please contact the undersigned for any reason. Applicants seek to cooperate with the Examiner including via telephone if convenient for the Examiner.

Respectfully submitted,

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